

# MONTHLY WEATHER REVIEW.

Editor: Prof. CLEVELAND ABBE.

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## INTRODUCTION.

The MONTHLY WEATHER REVIEW for November, 1897, is based on 2,864 reports from stations occupied by regular and voluntary observers, classified as follows: 144 from Weather Bureau stations; numerous special river stations; 33 from post surgeons, received through the Surgeon General, United States Army; 2,525 from voluntary observers; 96 received through the Southern Pacific Railway Company; 14 from Life-Saving stations, received through the Superintendent United States Life-Saving Service; 32 from Canadian stations; 20 from Mexican stations; 7 from Jamaica, W. I. International simultaneous observations are received from a few stations and used, together with trustworthy newspaper extracts and special reports.

Special acknowledgment is made of the hearty cooperation of Prof. R. F. Stupart, Director of the Meteorological Service of the Dominion of Canada; Mr. Curtis J. Lyons, Meteorologist to the Government Survey, Honolulu; Dr. Mariano Bárcena, Director of the Central Meteorological Observatory of Mexico; Mr. Maxwell Hall, Government Meteorologist,

Kingston, Jamaica; Capt. S. I. Kimball, Superintendent of the United States Life-Saving Service; and Commander J. E. Craig, Hydrographer, United States Navy.

The REVIEW is prepared under the general editorial supervision of Prof. Cleveland Abbe.

Attention is called to the fact that the clocks and self-registers at regular Weather Bureau stations are all set to seventy-fifth meridian or eastern standard time, which is exactly five hours behind Greenwich time; as far as practicable, only this standard of time is used in the text of the REVIEW, since all Weather Bureau observations are required to be taken and recorded by it. The standards used by the public in the United States and Canada and by the voluntary observers are believed to generally conform to the modern international system of standard meridians, one hour apart, beginning with Greenwich. Records of miscellaneous phenomena that are reported occasionally in other standards of time by voluntary observers or newspaper correspondents are generally corrected to agree with the eastern standard; otherwise, the local meridian is mentioned.

## STORM WARNINGS AND WEATHER FORECASTS.

By Lieut. Col. H. H. C. DUNWOODY, Supervising Forecast Official.

Under this head it is proposed to make note of all extreme and injurious weather conditions occurring during the month, and the warnings of the same issued by the Bureau, with instances, as far as reported by observers or the press, in which these warnings were of special public benefit. The signals displayed by the Weather Bureau will be referred to as "information," "storm," "hurricane," "cold wave," and "norther," respectively.

The following report on the work of November has been prepared by Mr. H. E. Williams, Chief of Forecast Division.

### SEVERE STORMS.

Only three storms of note occurred during the month, viz: Those of November 3-6, 7-10, and 9-12.

The first of these storms originated in western Kansas and moved from Iowa northeast over Lake Michigan and northern Lake Huron on the 5th, and thence easterly to the Gulf of St. Lawrence on the 6th, causing high easterly to northerly winds on the upper, and violent southerly to westerly gales on the lower lakes, a maximum velocity of 60 miles from the west being reported from Buffalo on the morning of the 6th.

Signals for this storm were ordered on western Lake Superior at 5:30 p. m. of the 3d, on Lakes Superior, Michigan, and Huron at 9:40 a. m. of the 5th, on Erie at daybreak of the 5th, and on Ontario at 2:30 p. m. of the 5th. This was the storm in which the ill-fated *Idaho* was lost on Lake Erie.

This vessel left Buffalo harbor on the afternoon of the 5th in the face of the storm signals which had been flying there since daybreak.

The second storm developed in Kansas, passed across the lower Lake Region on the 9th, and moved into the Atlantic off the east New England coast on the 10th, causing unusually low pressures along its track, a barometer reading of 29.06 at Oswego at 1 p. m., 29.00 at Portland, and 29.08 at Eastport at 8 p. m. of the 9th, and 28.98 at Halifax at 8 a. m. of the 10th being noted. The highest winds were 44 northwest at Cleveland and 38 northwest at Buffalo during the forenoon, and 40 northwest at Oswego, 56 west at New York, and 60 southwest at Block Island during the afternoon of the 9th. Signals were ordered on eastern Lakes Superior, Michigan, and Huron at 6 p. m. of the 8th, on Erie and Ontario at daylight of the 9th, and on the Atlantic coast from Delaware Breakwater to Eastport at 9:50 a. m. of the 9th.

The third storm appeared north of Montana on the 9th and moved southeast over Lakes Superior and Michigan on the 10th, the center crossing north of the lower Lake Region on the 11th, and passing off the New England coast on the 12th. Velocities of 56 miles at Chicago, 42 at Grand Haven, and 36 at Alpena occurred during the night of the 10th; 48 at Grand Haven, 38 at Sault Ste. Marie, 68 at Cleveland, and 46 at Buffalo during the 11th; 56 at Cleveland, 42 at Erie, 48 at Buffalo, 46 at Boston, and 52 at Eastport during the